Product Information ILM-2-CN **FOOD**

Inductive Conductivity Meter ILM-2-CN

CLEANadapt

Application/Specified usage

- Inductive measurement of the specific conductivity of liquid media in the range of 0...999 mS/cm.
- Designed for hygienic applications in food-, beverage- and pharmaceutical industries.

Authorizations

FDA

Application examples

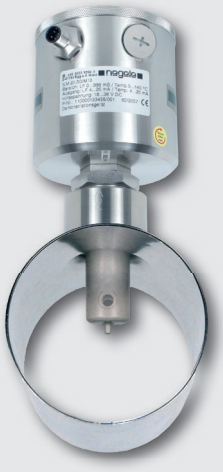
- Controlling of CIP processes (e. g. phase separation detergents/water)
- Concentration measurement (e.g. Alkali and acid concentration in remaking)
- Monitoring of product quality, quality control

ILM-2 / L20 with EMZ-352

Hygienic design/Process connection

- Flow optimized, hygienic and easy sterilizable installation by sleeve EMZ-352 or the build-in system EHG-.../1".
- CIP/SIP cleaning up to 140 °C / 30 minutes maximum
- Product contacting materials compliant to FDA
- Sensor made of stainless steel, toroid housing made of PEEK
- Additional process connections: Tri-Clamp, dairy flange (DIN 11851), Varivent, APV, DRD et alli

ILM-2 / L50 with EHG-system



Features/Advantages

- Maintenance-free inductive measurement principle.
- Contrary to conducitve measurement principle there are no problems caused by corrosion of the electrodes or polarization.
- 10 measurement ranges selectable.
- Precise measurment by compensation of temperature influence.
- High reproducibility of ≤ 1 % of measurement value.
- Installation in pipes from DN 40 possible.

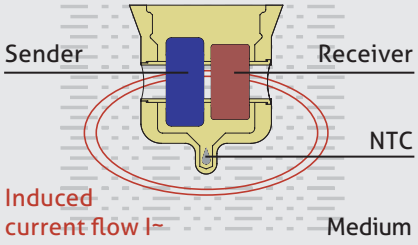
Options/Accessories

- Electrical connection via M12 plug-in connector
- Version with longer toroid housing for pipes ≥ DN 65 or for installation into T-fitting
- Preassembled cable for M12 plug-in connector

Measuring principle of the inductive conductivity meter

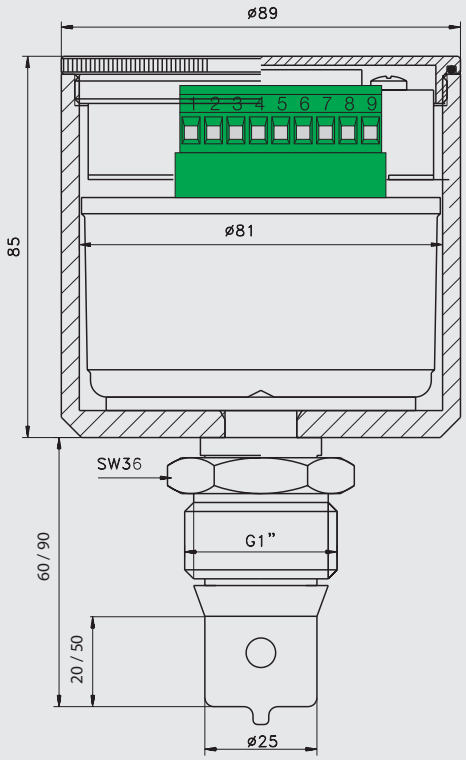
An alternating current generates a magnetic field in the primary coil (sender) which induces a current in the circumfluent medium. The current flow in the medium generates another magnetic field in the secondary coil (receiver). The strength of the induced current in the secondary coil depends on the conductivity of the medium. The conductivity of the liquid medium is temperature dependent. To compensate the temperature error, an additional sensor (NTC) in the sensor tip is used for monitoring the temperature of the medium. The temperature coefficient (TC-value) of the liquid can be set up in the electronics of the ILM which is used for automatic compensation of the temperature error.

Inductive conductivity measurement



Specification		
Process connection	thread G1" torque	sensor, combined with Negele-weld-in sleeves max. 20 Nm
Materials	connector head thread connection toroid housing window in lid	stainless steel 1.4305 (303), Ø 89 mm stainless steel 1.4305 (303), SW 36 mm PEEK, FDA-number (21CFR177.2415) PMMA
Temperature ranges	ambient process CIP/SIP cleaning	-10...+60 °C 0...100 °C up to 140 °C/30 minutes max.
Pressure		10 bar max.
Protection class		IP 69 K (with cable gland and suitable cable)
Measuring ranges		0...5 mS/cm up to 0...999 mS/cm 10 measuring ranges selectable
Temperature coefficient	free adjustable	0...5 %/K
Reproducibility	of conductivity	≤ 1 % of measurement value
Resolution	measurement range < 10 mS/cm 10...50 mS/cm 100...999 mS/cm	 1 µS/cm 10 µS/cm 100 µS/cm
Accuracy	span offset	±2 % of upper range value ±20 µS/cm
Long term stability	span offset	±0.5 % of upper range value ±20 µS/cm
Electrical connection	cable gland cable connection supply	1 x M16 x 1.5 1 x M12 plug 1.4305 (303)t 18...36 V DC max. 190 mA
Outputs	conductivity	analog 4...20 mA short-circuit-proof
LC-Display	with backlight	2 x 8-digits
Measurement principle	maintenance-free	inductive

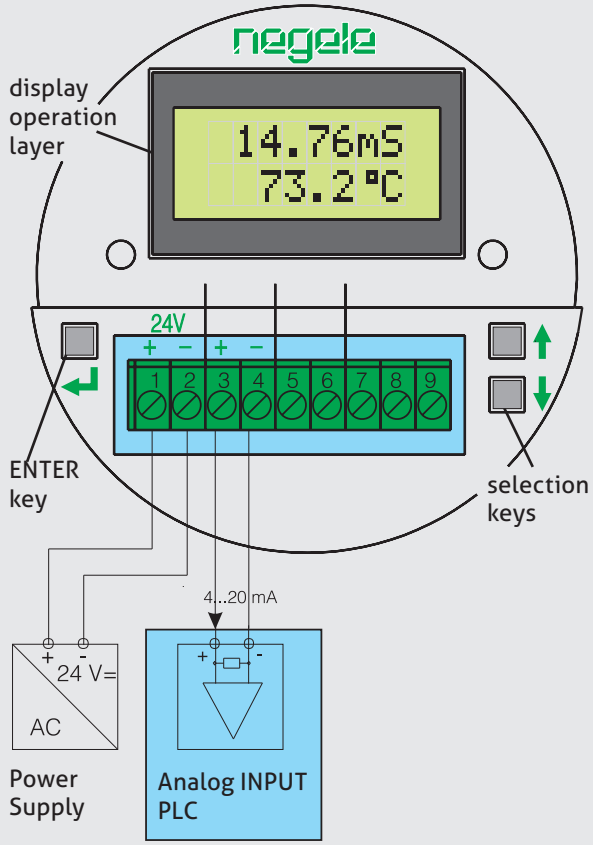
Dimensioned drawing



Mechanical connection/Installation

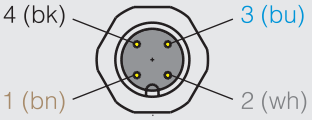
- The sensor has to be installed in that way that the torroid housing is entirely washed around by media and no bubbles can occure.
  Installation in a rising pipe is recommended.
- The inscription "FLOW" on the bottom side of the sensor has to show in flow direction of the medium.
- Very heavy vibrations can cause measurement errors (e. g. installation very near a pump).
- Use Negele **CLEANadapt** system for safe operation of measuring point!
- Attention: The maximum tightening torque for mounting is 20 Nm!
- Do not turn the head after tightening the coupling nut. Sensor might be damaged!
- Use a welding mandril for correct installation of **CLEAN-adapt** weld-in fittings.
  Please pay attention to the weld-in and installation details in the **CLEANadapt** product information (chapter one).

Electrical connection



With M12 plug-in

M12 plug-in left (4-pin)
outputs 4...20 mA



1: supply +24 V DC
2: output conductivity +
3: output conductivity -
4: supply -

Handling/Operation

Adjustment of measuring range

- Delivery status:
  measurement range 1: 0...20 mS/cm = 4...20 mA
  TC-value: 2 %/K.
- At ILM-2-CN one and the same TC is effective for all measurement ranges.

Advice

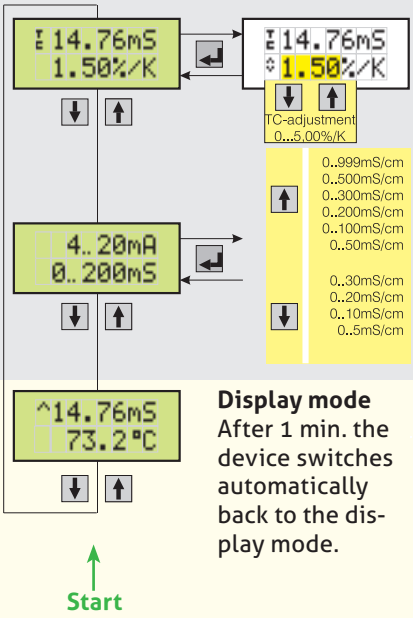
Occuring several media with very different conductivity in the application (e. g. CIP cleaning) switching to an adequate measuring range is neccessary for a precise measurement!

Detecting the temperature coefficient of the medium

Delivery status: see Handling/Operation

1. Adjust "TC" to 0 %/K (see Adjustment).
2. Dip sensor into medium with 25 °C.
3. Wait until the measurment value is stable.
4. Metering and note the conductivity value from the display.
5. Warm up the medium to 60 °C minimum. Thereby the conductivity value in the display is changing.
6. Wait until the measurment value is stable.
7. Select "TC" in the operation menue and adjust the temperature coefficient until the measurement value is equal to the value noted at step 4.

Operation menue ILM-2-CN



Temperature coefficient
Level TC

Measurement range

Display
Conductivity and temperature

Display mode
After 1 min. the device switches automatically back to the display mode.

Status messages ILM-2-CN

^-Symbol
"Current output conductivity overload",
will be displayed if the measured value is higher than the selected measurment range.
I_{out}: ca. 22 mA

^.^^^ -Symbol
the currently measured value is higher than the maximum measurement value (999ms/cm)
I_{out}: ca. 22 mA

◊-Symbol
the adjoining value is now editable via arrow buttons

vvv -Symbol
inductor error / sensor break
I_{out}: 2,4 mA

Cleaning/Maintenance

- In case of using pressure washers, dont't point nozzle directly to electrical connections!

Advice to EMC

- The device agrees to following standards:
- 89/336/EWG electromagnetic compatibility
- EN 50081-2 generic emission standard 03/94
- EN 50082-2 generic immunity standard 02/96
- You have to guarantee the EMC directives for the entire equipement.

Disposal

- This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws.
- Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points.

Transport/Storage

- Do not store outside
- Store in an area that is dry and dust-free
- Do not expose to corrosive media
- Protect against solar radiation
- Avoid mechanical shock and vibration
- Storage temperature 0...40 °C
- Relative humidity max. 80%

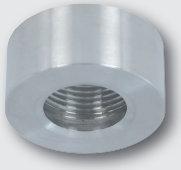
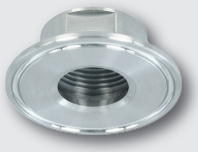
Reshipment

- Sensors and process connection must be clean and must not be contaminated with hazardous media and/or heat-conductive paste. Note the cleaning information!
- Use suitable transport packaging only to avoid damage of the equipment!

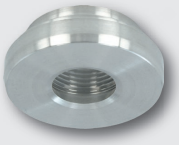
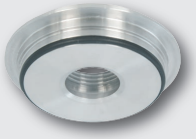
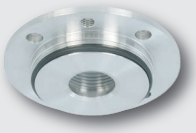
Phase separation in CIP-equipment with ILM-2

Phase separation in CIP-equipment with ILM-2

Overview of further possible process connections (adapter must be ordered separately!)
The complete overview of all available adapters you will find at product information **CLEANadapt.**

ILM-2-CN					
Process connection	**Build-in system EHG** (DIN 11850 series 2)	**Negele weld-in sleeve**	**Negele weld-in sleeve**	**Negele weld-in sleeve**	**Tri-Clamp**
DN40	**EHG-DIN2-40/1"**	**EMZ-352** suitable for installation in vessels	**EMZ-351** suitable for pipes and vessels with leackage hole	**EMS-352** suitable for installation in pulled-out pipes	**AMC-352/1"-1.5"**
DN50	**EHG-DIN2-50/1"**				**AMC-352/2"**
DN65	**EHG-DIN2-65/1"**				**AMC-352/3"**
DN80	**EHG-DIN2-80/1"**				**AMC-352/80**
DN100	**EHG-DIN2-100/1"**				**AMC-352/100**

Overview of further possible process connections (adapter must be ordered separately!)

ILM-2-CN					
Process connection	**Dairy flange** (DIN 11851)	**Varivent**	**APV-Inline**	**Adapter G1½" to G1"**	**Dummy flange**
DN40	**AMK-352/40**	**AMV-352**	**AMA-352**	**AMG-352** suitable for existing G1½" connection	**BST-350** to close existing measurement points
DN50	**AMK-352/50**	**AMV-352**	**AMA-352**		
DN65	**AMK-352/65**	**AMV-352**	**AMA-352**		
DN80	**AMK-352/80**	**AMV-352**	**AMA-352**		
DN100	**AMK-352/100**	**-**	**AMA-352**		

Order code

ILM-2-CN (10 measurement ranges, 1 temperature coefficient)

Insertion-Length

L20	(20 mm)
L50	(50 mm)

Electrical connection

PG	(cable gland M16x1.5)
M12	(M12 plug-in 1.4305 (303))

ILM-2-CN / L20 / M12

Accessories

PVC-cable with M12-connection, 1.4305 (303), IP 69 K, unshielded

M12-PVC / 4-5 m	PVC-cable 4-pin, length 5 m
M12-PVC / 4-10 m	PVC-cable 4-pin, length 10 m
M12-PVC / 4-25 m	PVC-cable 4-pin, length 25 m

PVC-cable with M12-connection, brass nickel-plated, IP 67, shielded

M12-PVC / 4G-5 m	PVC-cable 4-pin, length 5 m
M12-PVC / 4G-10 m	PVC-cable 4-pin, length 10 m
M12-PVC / 4G-25 m	PVC-cable 4-pin, length 25 m

M12-EVK	M12 plug-in screw cap, 1.4305 (303), with o-ring, as a protection against humidity and dirt
CERT / 2.2	factory certificate 2.2 acc. to EN10204 (only product contacting surface)

PVC-cable with M12-connection

M12 plug-in screw cap

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